

Ethnobotany Study Of Communities Of Forest Area Around Buyan And Tamblingan Lake, Buleleng, Bali

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Abstrak

Mayoritas masyarakat sekitar kawasan hutan danau Buyan dan Tamblingan memeluk agama Hindu. Masyarakat memanfaatkan tumbuhan dalam berbagai kepentingan, sehingga mereka memiliki peran penting untuk menjaga dan melestarikan keanekaragaman tumbuhan di sekitarnya. Penelitian ini bertujuan untuk mengetahui pemanfaatan tumbuhan oleh masyarakat Bali di sekitar kawasan hutan danau Buyan dan Tamblingan. Metode dalam penelitian ini adalah wawancara. Hasil menunjukkan bahwa terdapat 181 jenis tumbuhan yang dimanfaatkan oleh masyarakat untuk 11 jenis tujuan pemanfaatan.

Kata Kunci: studi etnobotani; masyarakat; kawasan hutan Danau Buyan dan Tamblingan; pemanfaatan tumbuhan

1. Preface

Forest area around Buyan and Tamblingan lake is one of tourist area and water catchment area for South and North Bali community (Badung, Denpasar, Tabanan and Buleleng) (Suji, 2005). This area is upstream region of Catur Angga Batukaru which is regarded as a sacred place by Balinese people. Conservation of this area is important for preservation of Subak Jatiluwih as a UNESCO World Heritage (Windia and Wiguna, 2013).

Biosphere Reserve Concept has been proposed at The Symposium on Analysis of Water Carrying Capacity in Beratan, Buyan and Tamblingan lakes area, Bali which was organized by Bali Botanical Garden – Indonesian Institute of Science and Bali Regional Environmental Impact Management Agency in 2005. The function of Biosphere Reserve Concept is as an agent to integrate and coordinate the efforts of all stakeholders without forgetting historical rights of land ownership or resources (Darnaedi, 2005).

Ethnobotany is the study of human culture and natural resources interaction (Rifai and Waluyo, 1992). Major communities around the forest area of Buyan and Tamblingan lake are Hindu. They believe Tri Hitakarana philosophy which teach them about relationship of man to God, man to man, and man to environment. They have an important role to maintain and preserve the diversity of plants.

The world conservation strategy has three goals: 1) to maintain ecological processes and life support systems, 2) to conserve of genetic diversity and 3) to ensure the utilization of species and ecosystems (Witono et al., 2012). This study aimed to identify plant utilization of Balinese people around the forest area of Buyan and Tamblingan lake. The results of this study can be used as a reference for local government and the nature reserve Batukaru forest area manager

2. Research Method

The study was conducted in Pancasari, Wanagiri, Sukasada and Munduk village which are bordering the forest area around Buyan and Tamblingan lake. Intentional interview sampling was conducted to international healer, banten (the person who prepared the traditional ceremony), housewife, farmer,

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craftsmen and builder. Interviews were conducted to three people of each profession in each village. Plant utilizations grouping was according to the method performed by Purwanto (1992).

Primary observed data includes local name, scientific name, family and utilization. Secondary observed data was topography. Data was analyzed by descriptive analysis with quantitative approach. Value of Benefit Index of each plant was got by formula:

$$VBI = \frac{\text{The number of utilization occurrences of plant}}{\text{Total number of utilization occurrences of all plants}} \times 100\% \quad (1)$$

3. Result and Discussion

3.1. General Conditions of Study Location

Forest area of Buyan and Tamblingan lake is next to Beratan lake, which well known as Bedugul tourist area. This area is an area of southen of some mountains, includes Pohen, Tapak, Lesung, Sanghyang (Buleleng district) and Beratan lake (Tabanan district). The topography of this area is undulating hill and mountain. 0-3% slope is in eastern part of Buyan lake and southern part of Tamblingan lake. 3-8% slope is in Pancasari village. 8-15% slope which is widest spread in western part of Tamblingan. Hilly topography is in Munduk and Pancasari village (Adnyana, 2005).

3.2. The Diversity of Utilized Plants

The results showed that there are 181 plant species commonly used by communities around the forest area of Buyan and Tamblingan lake. Utilization of these plants can be divided into 11 groups of utilization (Figure 1), namely 1) medicine as many as 69 species, 2) traditional ceremony as many as 105 species, 3) aromatic material as many as 8 species, 4) producers of building materials as many as 15 species, 5) producing seasoning ingredient as many as 9 species, 6) producing craft materials (music, rigging, matting) of 8 species, 7) livestock feed as many as 12 species, 8) producers of foodstuffs as many as 6 species, 9) producers of packaging materials of food as many as 6 species, 10) producer natural dyes as many as 6 different species and 11) vegetables as many as 18 species.

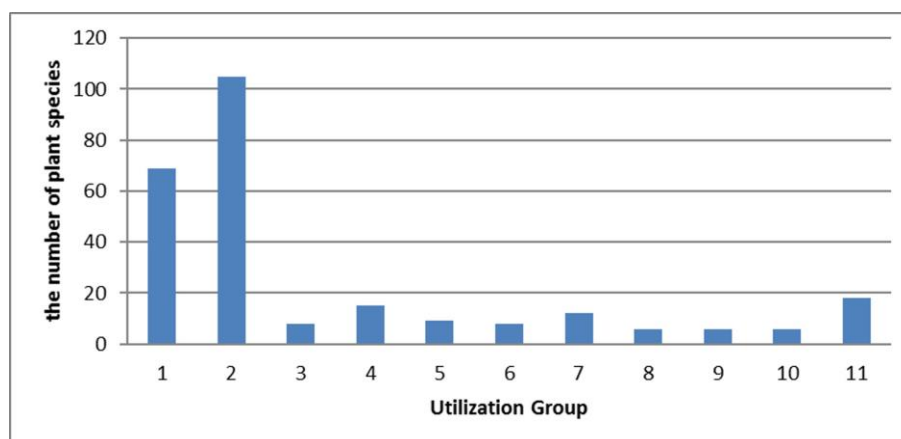


Figure 1. The number of plant species in each utilization group by community around forest area of Buyan and Tamblingan lake. Group 1=medicine, 2=traditional ceremony, 3=aromatic material, 4=building material, 5= seasoning ingredient, 6=craft material, 7=livestock feed, 8=foodstuff, 9=food wrapper material, 10=natural dyes, 11=vegetable

Utilization group that contain most plant species was religious ceremony. The high plant utilization in religious ceremonies caused by custom and religion of community, namely Hinduism which can not be separates from the plants (Pramita dkk., 2013). The next second highest utilization group was the use of plants as medicines, followed by plant as vegetables group. Balinese people generally use a lot of herbs as medicines because they believe that traditional medicine is more efficacious than chemical drugs. Balinese knowledge about traditional medicine is written in the Bali Usada which is containing treatment system, the ingredients and the way traditional Balinese treatment (Nugroho dkk., 2006).

3.3. Based on Value of Benefits Index

Based on the value of benefits index, there are 10 major plant species that benefit to communities around the forest area of Buyan and Tamblingan lake. They are *Musa paradisiaca* L. / banana, *Arenga pinnata* (Wurmb) Merr. / palm, *Artocarpus integer* (Thumb) Merr / jackfruit, *Cocos nucifera* L. / coconut, *Colocasia esculenta* / taro, *Curcuma domestica* Val., *Schizostachyum brachyckadum* (Kurz) Kurz / rope bamboo, *Moringa oleifera* / moringa, *Aleurites moluccanus* (L.) Willd. / tingkih and *Allium sativum* L. / kesuna.

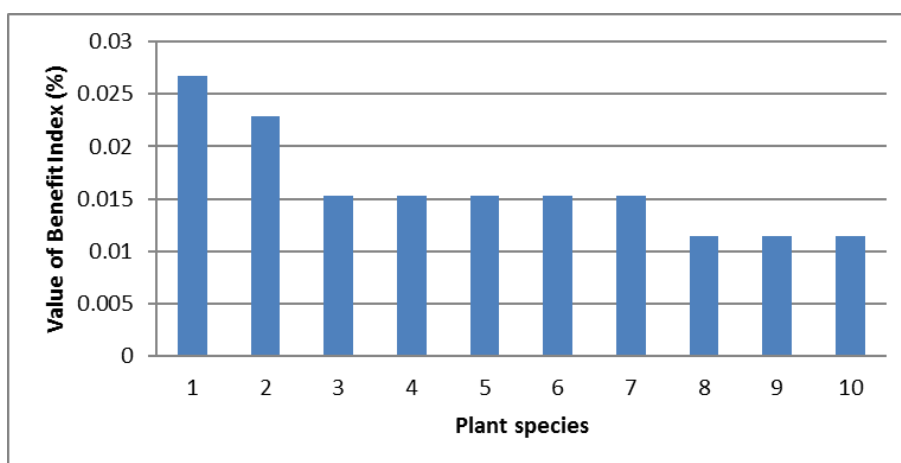


Figure 2. Value of Benefit Index of ten major plant species in forest area of Buyan and Tamblingan lake. 1=*Musa paradisiaca* L., 2=*Arenga pinnata* (Wurmb) Merr., 3=*Artocarpus integer* (Thumb) Merr, 4=*Cocos nucifera* L. , 5=*Colocasia esculenta*, 6=*Curcuma domestica* Val., 7=*Schizostachyum brachyckadum* (Kurz) Kurz, 8=*Moringa oleifera*, 9=*Aleurites moluccanus*(L.) Willd., 10=*Allium sativum* L..

The main plant was taken from 10 species with the highest value of benefits index (Figure 2). The first plant with the highest value of benefits index is *M. paradisiaca* L., followed by *Arenga pinnata* (Wurmb) Merr. The third benefit index value that is owned by five species, they are *Artocarpus integer* (Thumb) Merr, *Cocos nucifera* L., *Colocasia esculenta*, *Curcuma domestica* Val., and *Schizostachyum brachyckadum* (Kurz) Kurz. The fourth benefit index value that is owned by three species, they are *Moringa oleifera*, *Aleurites moluccanus* (L.) Willd. / and *Allium sativum* L.

The 10 main plants can be grouped into cultivated plants and wild plants. Cultivated plants are that *Musa paradisiaca* L., *Artocarpus integer* (Thumb) Merr, *Cocos nucifera* L., *Colocasia esculenta*, *Curcuma domestica* Val., *Moringa oleifera*, *Aleurites moluccanus* (L.) Willd and *Allium sativum* L. Wild plants are *Arenga pinnata* (Wurmb) Merr, and *Schizostachyum brachyckadum* (Kurz) Kurz.

The altitude of forest area around Buyan and Tamblingan lake is about 1210-1350 meters above sea level (Sutomo and Dharma, 2011). The plants which suitable for growing in this area are *Colocasia esculenta*, *Curcuma domestica* Val., *Schizostachyum brachyckadum* (Kurz) Kurz, *Moringa oleifera*, *Aleurites moluccanus* (L.) Willd and *Allium sativum* L. While the plant that can grow with no maximum

growth is *Musa paradisiaca* L. This plant grows optimally at an altitude of 400-600 meters above sea level. In the highlands like this area, the banana will turn into a long period of harvest and thick-peel. *Artocarpus integer* (Thumb) Merr can also grow but not optimal in this area. *Artocarpus integer* (Thumb) Merr grows optimally at an altitude of 1-700 meters above sea level. The plants that totally can not be grown in forest area around Buyan and Tamblingan lake are *Cocos nucifera* L., and *Arenga pinnata* (Wurmb) Merr. In-situ onservation can be done for this two species.

Among the 181 species recorded there are several species that conservation status is listed in the IUCN Red List of Threatened Species. One species with the status of vulnerable / at risk, namely *Saurauia bracteosa* DC. Wihermanto et al. (2004) mentions in his research that the population status *Saurauia bracteosa* DC. changes become endangered category / precarious. Communities around the forest area of Buyan and Tamblingan lake utilize this plant as livestock feed. Conservation efforts to do are the socialization of the conservation status of these species to the public, conduct further research on the reintroduction and persuasively urge people to use other species to replace *Saurauia bracteosa* DC as livestock feed.

There is one endangered pecies, *Borassus flabellifer* L./ ental. In Bali, the utilization of this plant is very high which is used in traditional ceremonies. The high utilization rate demands conservation efforts should be held to *Borassus flabellifer* L. even insitu or exsitu conservation.

There are two species listed as rare plants Indonesia, namely *Alstonia scholaris* (L.) R.Br. and *Euchresta horsfieldii* (Lesch.) Benn. (Mogea et al., 2001). *Alstonia scholaris* (L.) R.Br. is used by communities as medicine and religious ceremonies. Meena et al. (2011) mentions that *Alstonia scholaris* (L.) R.Br. extracts has some pharmacological activity that is as an antioxidant, antibacterial, hepatoprotective, anticancer, antidiabetic, antistress, antidiarrheal and others. *Euchresta horsfieldii* (Lesch.) Benn. is used as a medicine. Tirta et al. (2010) mentions that there are 40 secondary metabolites in *Euchresta horsfieldii* (Lesch.) Benn. One of the secondary metabolites is Kaur-16-ene from the stem. This compound is a derivative of kaur compounds that can serve as an anticancer. People believe that the seed of this plant as aphrodisiac agent. They search for it in forest around Buyan and Tamblingan lake. To preserve the biodiversity of *Euchresta horsfieldii* (Lesch.) Benn., exsitu conservation is needed (Sutomo, 2010).

4. Conclusion

There are 181 plant species commonly used by communities around the forest area of Buyan and Tamblingan lake. The utilization of that plants are as medicine, traditional ceremony material, aromatic material, building material, seasoning ingredient, craft material, livestock feed, foodstuff, food wrapper, natural dyes, and vegetable.

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